

Date: Tuesday, 16/12/2008 12:59:53 PM
 User: Chantal Lavoie

Process Sheet

Customer :	CU-DAR001 Dart Helicopters Services	Drawing Name :	CASTING, SUPPORT BRACKET
Job Number :	44114		
Estimate Number :	10935		
P.O. Number :		Part Number :	D2265
This Issue :	16/12/2008	Drawing Number :	D2265 REV A
Prsht Rev. :	NC	Project Number :	N/A
First Issue :	1/1	Drawing Revision :	A
Previous Run :	37477	Material :	
Written By :	<i>u</i>	Due Date :	16/12/2008
Checked & Approved By :	<i>C208112116</i>	Qty:	100
Comment :	Est D 98.12.15 Added Dwg Rev DM	Um:	Each

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
----------------	------------------------------	----------------------

1.0	PG	PURCHASING
-----	----	------------



Comment: PURCHASING

Issue P/O: *7632*

Cast parts per drawing D2265

Possible Supplier: Alpine Foundry

Material release note required

*C208112116**(100)*

2.0	D2265P	Step Support Casting
-----	--------	----------------------



Comment: Qty.: 1.0000 Each(s)/Unit Total: 100.0000 Each(s)
 Step Support Casting

3.0	PACKAGING 1	PACKAGING RESOURCE #1
-----	-------------	-----------------------



Comment: PACKAGING RESOURCE #1

Receive & Inspect for Transit Damage

Ensure Material Release Note is attached

P 1/4/15 (100)

4.0	QC6	DIMENSIONAL CHECK
-----	-----	-------------------



Comment: DIMENSIONAL CHECK

*S 08/12/19 (100)**counter*

5.0	SMALL FAB 1	SMALL & MEDIUM FAB RESOURCE 1
-----	-------------	-------------------------------



Comment: SMALL & MEDIUM FAB RESOURCE 1
 Grind tips of castings as per Dwg D2265

E 09/01/15 (100)

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: D2265 PAR #: _____ Fault Category: _____ NCR: Yes ☒ No ☐ DQA: DD Date: 09/01/12
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR: <u>44114</u>		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
08.12.18	1	Supplier used 535.2 alloy instead of 356.2	CP 08.12.18 pc OSI 042	535.2 is an acceptable substitute to 356.2. PER ASTM B261 B179, 535.2 HAS SUPERIOR STRENGTH. Acceptable. SEE ATTACHED	n/h	S 08/12/19	CP 08.12.18 pc OSI 042	S 08/12/19

NOTE: Date & initial all entries

Date: Tuesday, 16/12/2008 12:59:53 PM
User: Chantal Lavoie

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: CASTING, SUPPORT BRACKET

Job Number: 44114

Part Number: D2265

Job Number:



Seq. #:

Machine Or Operation:

Description :

6.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

8 09/01/15 *counters*
+100

7.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock
Location: *425*

9/1/15

100x

SP

8.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

09/01/15 *H*

Job Completion



U 09/01/15

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

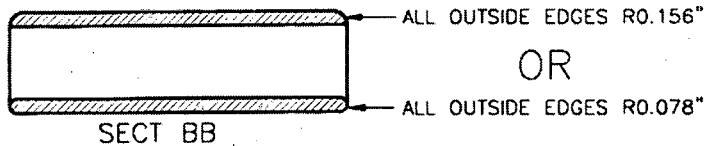
DART



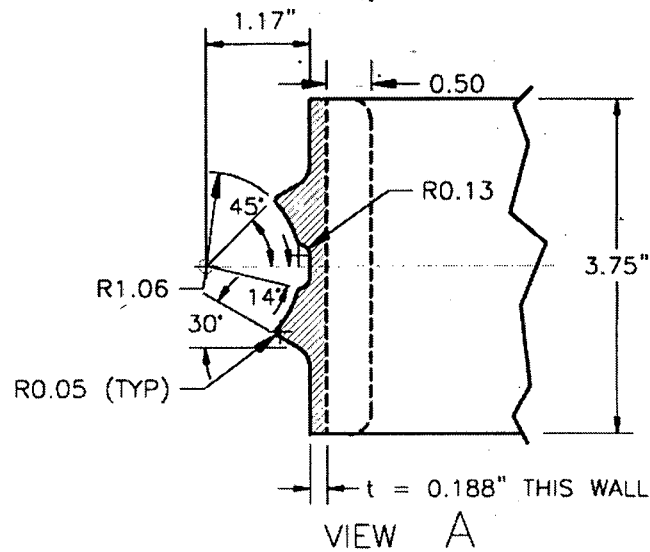
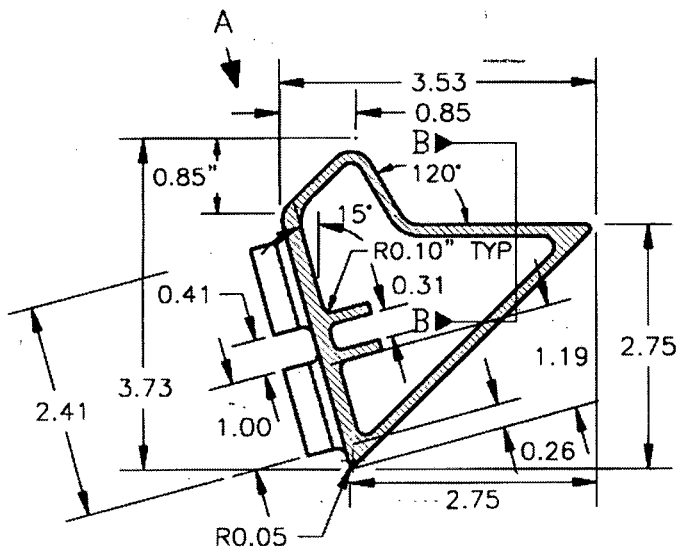
PREPARED B. Williams		DART AERO ACCESSORIES INC VICTORIA INTERNATIONAL AIRPORT, CANADA	
CHECKED	APPROVED	D2265	REV. A
DATE Aug. 18, 1994	TITLE STEP SUPPORT CASTING		SHEET 1 OF 1
		SCALE 1:2	

RELEASED
9/6/05/27

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 44114



UNDIMENSIONED OUTER RADII 0.375"
UNDIMENSIONED INNER RADII 0.25"
UNDIMENSIONED WALL THICKNESSES 5/32"
MATERIAL: CAST ALUMINUM
ALLOY A356.2 (F)



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

ALPINE NON-FERROUS FOUNDRY8657-132ND STREET
SURREY, B.C. V3W 4P1*Attn Shantal*
WORK ORDER

Tel: (604) 596-8080

Fax: (604) 596-8045

Sold To: DART AEROSPACE
1270 ABERDEEN STREET
HAWKESBURY, ONT K6A 1K7
CANADA**Ship To: DART AEROSPACE**

Order Date		Purchase Order#	Due Date	Ship Via			Page
20-Nov-2008		PO0007632		FEDEX			1
Item	Item Code	Description	Material	Ordered	U.O.	Qty Ship	
1	DART D2265 ✓	D2265 CSTG,SUPPORT BRACKET		100		100	
2	6208112/14						

Comments

Castings&Patterns are property of Alpine until paid in full

*Shipped by FedEx
on Dec 11/08*

**ALPINE NON-FERROUS FOUNDRY OF CANADA LTD.**

8657-132nd Street, Surrey, B.C. V3W 4P1
Bus: (604) 596-8080 Fax: (604) 596-8045
E-mail: gdhiman@telus.net

INVOICE

Invoice No.: 3926
Date: 16-Dec-2008
Re. Order No.: PO0007632-2

Sold To: DART AEROSPACE
1270 ABERDEEN STREET
HAWKESBURY, ONT K6A 1K7
CANADA

Ship To: DART AEROSPACE

Business No.: 875500001 RC0001

Item No.	Quantity Unit	Description	Tax	Unit Price	Amount
DART D2265	100 Each	D2265 CSTG,SUPPORT BRACKET	GS	13.75	1,375.00
Subtotal:					1,375.00
GS - GST @ 5%					
GST					68.75
PST Exempt					
Terms: Net 30					
Due 15-Jan-2009					

Shipped By FEDEX

Comments

Total Amount 1,443.75

CERTIFICATE OF ANALYSIS

CUSTOM ALLOY LIGHT METALS
13329 ECTOR STREET CITY OF INDUSTRY, CA 91746
PH# (626) 369-3641 FAX# (626) 369-2471

CUSTOMER:

RYPAC ALUMINUM
11849 TANNERY ROAD
SURREY BRITISH COLUMBIA,

SHIP DATE NOV 05 2008

CONFORMS TO ASTM SPECIFICATION: B179-06

Alloy: 535.2

Heat: a8297

See Pk on Page #1

Si	0.075
Fe	0.087
Cu	0.005
Mn	0.173
Mg	7.380
Cr	0.001
Zn	0.050
Ti	0.146
Sn	0.004
Pb	0.001
Ni	0.001
OET	< .15
Sr	0.000
Al	REMAINDER

Si	.10
Fe	.10
Cu	.05
Mn	.10-.25
Mg	6.6-7.5
Cr	
Zn	.05
Ti	.10-.25
Sn	
Pb	
Ni	
OET	.15
Sr	
Al	REMAINDER

BE .004

BE .003-.007

ELEMENTS LISTED WITHOUT A RANGE, UNDER THE REQUIRED SPECIFICATIONS, ARE MAXIMUM ALLOWABLE PERCENTAGES. SAMPLES ANALYZED ON AN OPTICAL EMISSION SPECTROMETER WITH CURRENT CALIBRATION STATUS. STANDARDS ARE NIST OR ARE TRACEABLE TO NIST.

Ron Zakrzewski

RON ZAKRZEWSKI

LAB MANAGER

PM-12-01 Rev. D 1/23/2001

NOV 05 2008

DATE

WARNING: THE BUYER IS ADVISED THAT THIS METAL MAY CONTAIN CREVICES AND HIDDEN RECESSES HOLDING ENTRAPPED MOISTURE. THE METAL SHOULD BE HANDLED AND PROCESSED WITH THIS POSSIBILITY IN MIND. ENTRAPPED MOISTURE MAY CAUSE AN EXPLOSION IF THE METAL IS INTRODUCED INTO A MELTING FURNACE WITHOUT PROPER DRYING.

Chris Provencal

From: Chris Provencal [cprovencal@dartaero.com]

Sent: December 18, 2008 4:04 PM

To: 'David Shepherd'

Cc: 'mpetsche@dartaero.com'

Subject: NCR D2265

Attachments: alum-casting-alloys_FEB05.pdf; B 26 – B 26M – 03 ;QJI2L0IYNK0_.pdf; B 179 – 03 ;QJE3OQ_.pdf; Matl-Cert.pdf; D2265-RevA.pdf

David,

We've received some D2265 Step Support Castings that use a different grade of aluminum than called on the dwg. The dwg is calling up aluminum alloy **A356.2 (F)** [which I assume refers to ANSI 356.2 (F), as A356.2 doesn't exist in the casting specs]. The supplied parts are **ANSI 535.2**, per ASTM B179-06.

Per ASTM B179, the difference between 356.2 and 535.2 is that 535.2 has less silicon and heavy metals [iron, copper, zinc], but more manganese and magnesium.

Looking at ASTM B26 (which ASTM B179 references), alloy 356.0 (F) has a $F_{tu} = 19\text{ksi}$, $F_{ty} = 9.5\text{ksi}$, Min elong = 2.0, and brinell hardness of 55. 356.2 is a subset of 356.0, the ".2" meets the max composition requirements of the ".0", but not vice versa. So these strength requirements are applicable to 356.2 (F).

ASTM B26 indicates that 535.0 (F) has a $F_{tu} = 35.0\text{ksi}$, $F_{ty} = 18.0\text{ksi}$, min elong = 9.0 and brinell hardness of 70. Similarly, these strength properties would be applicable to 535.2 (F).

Therefore the supplied parts are stronger than the dwg requirements. I therefore think this is an acceptable substitution. The supplier indicated that they use 535.2 alloy because it doesn't require heat treating to have any strength. ASTM B26 substantiates this giving a series of tempers for 356.0 series alloy, but all have a F_{tu} less than 535.0 in the (F) "as cast" condition.

Further, doing some net searching I found the attached pdf from "Mid-Atlantic Casting Services", which indicates that 535.0 is known for having good strength, shock resistance, ductility, and very high corrosion resistance (because of a lack of heavy metals). Further the high magnesium is said to give it excellent resistance to salt spray. Although not a controlled doc, this would further allude to the fact 535.0 is superior.

Unless otherwise indicated, I will sign-off the material as an acceptable deviation on the dwg based on the superior strength properties of the 535.2 aluminum. I will update the dwg to add this alloy as an option, and to add reference to ASTM B179. I will add this email to a design review justifying the change. I've attached the relevant reference docs in case you want to review this yourself.

Sincerely,

Christopher Provencal

DART Aerospace Ltd.

cprovencal@dartaero.com

Tel: (613) 632 5200

Fax: (613) 632 9311

TABLE 1 Chemical Composition Limits for Alloys Normally Used in Sand and Permanent Mold Casting Processes

NOTE 1—Where single units are shown, these indicate the maximum amounts permitted.

NOTE 2—Analysis shall be made for the elements for which limits are shown in this table.

NOTE 3—The following applies to all specified limits in this table: For purposes of determining conformance to these limits, an observed value or a calculated value obtained from analysis shall be rounded to the nearest unit in the last right-hand place of figures used in expressing the specified limit in accordance with the rounding-off method of Practice E 29.

Alloy ^A		Use ^B	Composition, %													Others ^C		Aluminum
ANSI ^A	UNS		Silicon	Iron	Copper	Manganese	Magnesium	Chromium	Nickel	Zinc	Tin	Titanium	Each	Total ^D				
201.2	A02012	S	0.10	0.10	4.0-5.2	0.20-0.50	0.20-0.55	...	...	...	...	0.15-0.35	0.05 ^E	0.10	remainder
204.2	A02042	S,P	0.15	0.10-0.20	4.2-4.9	0.05	0.20-0.35	...	0.03	0.05	0.05	0.15-0.25	0.05	0.15	remainder			
242.1	A02421	S,P	0.7	0.8	3.5-4.5	0.35	1.3-1.8	0.25	1.7-2.3	0.35	...	0.25	0.05	0.15	remainder			
242.2	A02422	S,P	0.6	0.6	3.5-4.5	0.10	1.3-1.8	...	1.7-2.3	0.10	...	0.20	0.05	0.15	remainder			
A242.1	A12421	S	0.6	0.6	3.7-4.5	0.10	1.3-1.7	0.15-0.25	1.8-2.3	0.10	...	0.07-0.20	0.05	0.15	remainder			
A242.2	A12422	S	0.35	0.6	3.7-4.5	0.10	1.3-1.7	0.15-0.25	1.8-2.3	0.10	...	0.07-0.20	0.05	0.15	remainder			
295.1	A02951	S	0.7-1.5	0.8	4.0-5.0	0.35	0.03	...	...	0.35	...	0.25	0.05	0.15	remainder	
295.2	A02952	S	0.7-1.2	0.8	4.0-5.0	0.30	0.03	...	...	0.30	...	0.20	0.05	0.15	remainder	
296.1	...	P	2.0-3.0	0.9	4.0-5.0	0.35	0.05	...	0.35	0.50	...	0.25	...	0.35	remainder			
296.2	...	P	2.0-3.0	0.8	4.0-5.0	0.30	0.03	...	...	0.30	...	0.20	0.05	0.15	remainder	
308.1	A03081	P	5.0-6.0	0.8	4.0-5.0	0.50	0.10	...	...	1.0	...	0.25	...	0.50	remainder	
308.2	A03082	P	5.0-6.0	0.8	4.0-5.0	0.30	0.10	...	...	0.50	...	0.20	...	0.50	remainder	
319.1	A03191	S,P	5.5-6.5	0.8	3.0-4.0	0.50	0.10	...	0.35	1.0	...	0.25	...	0.50	remainder			
319.2	A03192	S,P	5.5-6.5	0.6	3.0-4.0	0.10	0.10	...	0.10	0.10	...	0.20	...	0.20	remainder			
328.1	A03281	S	7.5-8.5	0.8	1.0-2.0	0.20-0.6	0.25-0.6	0.35	0.25	1.5	...	0.25	...	0.50	remainder			
332.1 ^F	A03321	P	8.5-10.5	0.9	2.0-4.0	0.50	0.6-1.5	...	0.50	1.0	...	0.25	...	...	remainder	
332.2 ^F	A03322	P	8.5-10.0	0.6	2.0-4.0	0.10	0.9-1.3	...	0.10	0.10	...	0.20	...	0.15	remainder			
333.1	A03331	P	8.0-10.0	0.8	3.0-4.0	0.50	0.10-0.50	...	0.50	1.0	...	0.25	...	0.50	remainder			
336.1 ^F	A03361	P	11.0-13.0	0.9	0.50-1.5	0.35	0.8-1.3	...	2.0-3.0	0.35	...	...	...	0.30	remainder
336.2 ^F	A03362	P	11.0-13.0	0.9	0.50-1.5	0.10	0.9-1.3	...	2.0-3.0	0.10	...	...	...	0.50	remainder
354.1	A03541	P	8.6-9.4	0.15	1.6-2.0	0.10	0.45-0.6	...	...	0.10	...	0.20	0.05	0.15	remainder	
355.1	A03551	S,P	4.5-5.5	0.50 ^G	1.0-1.5	0.50 ^G	0.45-0.6	0.25	...	0.35	...	0.25	0.05	0.15	remainder			
355.2	A03552	S,P	4.5-5.5	0.14-0.25	1.0-1.5	0.05	0.50-0.6	...	...	0.05	...	0.20	0.05	0.15	remainder	
C355.2	A33552	S,P	4.5-5.5	0.13	1.0-1.5	0.05	0.50-0.6	...	...	0.05	...	0.20	0.05	0.15	remainder	
356.1	A03561	S,P	6.5-7.5	0.50 ^G	0.25	0.35 ^G	0.25-0.45	...	...	0.35	...	0.25	0.05	0.15	remainder	
356.2	A03562	S,P	6.5-7.5	0.13-0.25	0.10	0.05	0.30-0.45	...	...	0.05	...	0.20	0.05	0.15	remainder	
A356.2	A13562	S,P	6.5-7.5	0.12	0.10	0.05	0.30-0.45	...	...	0.05	...	0.20	0.05	0.15	remainder	
357.1	A03571	P	6.5-7.5	0.12	0.05	0.03	0.45-0.6	...	...	0.05	...	0.20	0.05	0.15	remainder	
A357.2	A13570	P	6.5-7.5	0.12	0.10	0.05	0.45-0.7	...	...	0.05	...	0.04-0.20	0.03 ^H	0.10	remainder	
359.2	A03592	P	8.5-9.5	0.12	0.10	0.10	0.55-0.7	...	...	0.10	...	0.20	0.05	0.15	remainder	
443.1	A04431	S,P	4.5-6.0	0.6	0.6	0.50	0.05	0.25	...	0.50	...	0.25	...	0.35	remainder			
443.2	A04432	S,P	4.5-6.0	0.6	0.10	0.10	0.05	...	...	0.10	...	0.20	0.05	0.15	remainder	
B443.1	A24431	S,P	4.5-6.0	0.6	0.15	0.35	0.05	...	...	0.35	...	0.25	0.05	0.15	remainder	
A444.2	A14442	P	6.5-7.5	0.12	0.05	0.05	0.05	...	...	0.05	...	0.20	0.05	0.15	remainder	
513.2 ^F	A05132	P	0.30	0.30	0.10	0.10	3.6-4.5	...	...	1.4-2.2	...	0.20	0.05	0.15	remainder	
514.1	A05141	S	0.35	0.40	0.15	0.35	3.6-4.5	...	...	0.15	...	0.25	0.05	0.15	remainder	
514.2	A05142	S	0.30	0.30	0.10	0.10	3.6-4.5	...	...	0.10	...	0.20	0.05	0.15	remainder	
520.2	A05202	S	0.15	0.20	0.20	0.10	9.6-10.6	...	...	0.10	...	0.20	0.05	0.15	remainder	
535.2	A05352	S,P	0.10	0.10	0.05	0.10-0.25	6.6-7.5	...	...	...	...	0.10-0.25	0.05 ^I	0.15	remainder
705.1	A07051	S,P	0.20	0.6	0.20	0.40-0.6	1.5-1.8	0.20-0.40	...	2.7-3.3	...	0.25	0.05	0.15	remainder			
707.1	A07071	S,P	0.20	0.6	0.20	0.40-0.6	1.9-2.4	0.20-0.40	...	4.0-4.5	...	0.25	0.05	0.15	remainder			
710.1 ^F	A07101	S	0.15	0.40	0.35-0.65	0.05	0.65-0.8	...	...	6.0-7.0	...	0.25	0.05	0.15	remainder	
711.1 ^F	A07111	P	0.30	0.7-1.1	0.35-0.65	0.05	0.30-0.45	...	...	6.0-7.0	...	0.20	0.05	0.15	remainder	
712.2 ^F	A07122	S	0.15	0.40	0.25	0.10	0.50-0.65	0.40-0.6	...	5.0-6.5	...	0.15-0.25	0.05	0.20	remainder			
713.1	A07131	S,P	0.25	0.8	0.40-1.0	0.6	0.25-0.50	0.35	0.15	7.0-8.0	...	0.25	0.10	0.25	remainder			
771.2	A07712	S	0.10	0.10	0.10	0.10	0.85-1.0	0.06-0.20	...	6.5-7.5	...	0.10-0.20	0.05	0.15	remainder			
850.1	A08501	S,P	0.7	0.50	0.7-1.3	0.10	0.10	...	0.7-1.3	...	5.5-7.0	0.20	...	0.30	remainder			
851.1 ^F	A08511	S,P	2.0-3.0	0.50	0.7-1.3	0.10	0.10	...	0.30-0.7	...	5.5-7.0	0.20	...	0.30	remainder			



B 26/B 26M - 03

TABLE 2 Tensile Requirements^A (Inch-Pound Units)

NOTE 1—For purposes of determining conformance with this specification, each value for tensile strength and yield strength shall be rounded to the nearest 0.1 ksi and each value for elongation shall be rounded to the nearest 0.5 %, both in accordance with the rounding method of Practice E 29.

Alloy		Temper ^B	Tensile Strength, min, ksi	Yield Strength (0.2 % offset), min, ksi	Elongation in 2 in. or 4 x diameter, min, %	Typical Brinell Hard- ness, ^C 500 kgf, 10 mm
ANSI ^D	UNS					
201.0	A02010	T7	60.0	50.0	3.0	...
204.0	A02040	T4	45.0	28.0	6.0	...
242.0	A02420	O ^E	23.0	F	F	70
		T61	32.0	20.0	F	105
A242.0	A12420	T75	29.0	F	1.0	75
295.0	A02950	T4	29.0	13.0	6.0	60
		T6	32.0	20.0	3.0	75
		T62	36.0	28.0	F	95
		T7	29.0	16.0	3.0	70
319.0	A03190	F	23.0	13.0	1.5	70
		T5	25.0	F	F	80
		T6	31.0	20.0	1.5	80
328.0	A03280	F	25.0	14.0	1.0	60
		T6	34.0	21.0	1.0	80
355.0	A03550	T6	32.0	20.0	2.0	80
		T51	25.0	18.0	F	65
		T71	30.0	22.0	F	75
C355.0	A33550	T6	36.0	25.0	2.5	...
356.0	A03560	F	19.0	9.5	2.0	55
		T6	30.0	20.0	3.0	70
		T7	31.0	F	F	75
		T51	23.0	16.0	F	60
		T71	25.0	18.0	3.0	60
A356.0	A13560	T6	34.0	24.0	3.5	80
		T61	35.0	26.0	1.0	...
443.0	A04430	F	17.0	7.0	3.0	40
B443.0	A24430	F	17.0	6.0	3.0	40
512.0	A05120	F	17.0	10.0	...	50
514.0	A05140	F	22.0	9.0	6.0	50
520.0	A05200	T4	42.0	22.0	12.0	75
535.0	A05350	F	35.0	18.0	9.0	70
705.0	A07050	T5	30.0	17.0 ^G	5.0	65
707.0	A07070	T7	37.0	30.0 ^G	1.0	80
710.0 ^H	A07100	T5	32.0	20.0	2.0	75
712.0 ^H	A07120	T5	34.0	25.0 ^G	4.0	75
713.0	A07130	T5	32.0	22.0	3.0	75
771.0	A07710	T5	42.0	38.0	1.5	100
		T51	32.0	27.0	3.0	85
		T52	36.0	30.0	1.5	85
		T6	42.0	35.0	5.0	90
		T71	48.0	45.0	2.0	120
850.0	A08500	T5	16.0	F	5.0	45
851.0 ^H	A08510	T5	17.0	F	3.0	45
852.0 ^H	A08520	T5	24.0	18.0	F	60

^A If agreed upon between the manufacturer and the purchaser, other mechanical properties may be obtained by other heat treatments such as annealing, aging, or stress relieving.

^B Refer to ANSI H35.1 and/or H35.1M for description of tempers.

^C For information only, not required for acceptance.

^D ASTM alloy designations are recorded in Practice B 275.

^E Formerly designated as 222.0-T2 and 242.0-T21.

^F Not required.

^G Yield strength to be determined only when specified in the contract or purchase order.

^H 710.0 formerly A712.0, 712.0 formerly D712.0, 851.0 formerly A850.0, 852.0 formerly B850.0.

4.2.5 Whether inspection is required at the producer's works (Section 20).

4.2.6 Whether certification is required (23.1).

4.2.7 Whether surface requirements shall be checked against observational standards where such standards are established (21.1).

4.2.8 Whether liquid penetrant inspection is required (21.2).

4.2.9 Whether radiographic inspection is required (21.3), and

4.2.10 Whether foundry control is required (Section 11).

4.2.11 Whether Practice B 660 applies and, if so, the levels of preservation, packaging and packing required (25.4).

5. Quality Assurance

5.1 Unless otherwise specified in the contract or purchase order, the producer shall be responsible for the performance of all inspections and test requirements specified herein. Unless disapproved by the purchaser, the producer may use his own or any other suitable facilities for the performance of the inspection and test requirements specified herein. The purchaser shall have the right to perform any of the inspections and tests set forth in this specification where such inspections are deemed necessary to confirm that the material conforms to prescribed requirements.